

**TITLE:** IMPACT OF ENVIRONMENTAL AND SOCIOECONOMIC FACTORS ON THE MICROBIOLOGICAL QUALITY OF WATER CONSUMED IN NORTH OF PARANÁ STATE, BRAZIL

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**ABSTRACT:**

Diseases related to the ingestion of contaminated water are a major public health problem. Data obtained from epidemiological studies support the hypothesis that water plays an important role in the transmission of pathogens and is responsible for several diarrheal outbreaks worldwide. This study aims to evaluate the microbiological quality of drinking water obtained from different points in urban and rural areas located in 20 municipalities of north of Paraná State, Brazil and to verify the impact of different variables when the occurrence of the main fecal contamination microorganism (*Escherichia coli*). Between January 1, 2009 to December 31, 2013, 10,360 drinking water samples were testing for the detection of *E. coli* using the defined substrate method Colilert. *E. coli* was detected in 2,038 (19.67%) samples and the concentration of *E. coli* detected in these water samples ranged between 0 cfu/100 ml and 2,000,000 cfu/100 ml. A multivariate model of water supply data showed the strong impact of various categories on the quality of the consumed water. Samples from deep boreholes (OR 0.13, CI 0.12–0.16) or urban waters (OR 0.004, CI 0.003–0.005) were less likely to *E. coli* contamination than springs sources. Domestic supplies were more likely to contamination than commercial supplies (OR 10.8, CI 9.3–12.5) as were supplies with no effective treatment (OR109.2, CI 83.2–143.5). The probability of *E. coli* presence was linearly associated with the turbidity value of sample and human development Index (HDI) of the municipality. Drinking water supplies represent an important resource used for thousands of people living in North of Paraná State and daily several urban and rural communities use this water system for human consumption and food preparation. Thus, these findings will be able to inform risk assessments of drinking water supplies prior to microbiological results being available.

**Keywords:** drinking water, *Escherichia coli*, Colilert, contamination

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